STONEFIELD
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STORMWATER MANAGEMENT STATEMENT

Project: **Proposed Starbucks Drive-Thru Only Facility**
Block 6, Lots 1 & 38
1 Stuyvesant Avenue
Township of Lyndhurst, Bergen County, New Jersey

Reference: **Preliminary & Final Major Site Plans**
Prepared by Stonefield Engineering & Design, LLC.
Dated: March 11, 2021
Last Revised: March 11, 2021

The purpose of this statement is to assess the stormwater management impacts of the proposed redevelopment of the site. The project site is designated Block 6, Lots 1 and 38 commonly known as 1 Stuyvesant Avenue. The site is located at the southern corner of the intersection of Park Avenue and Stuyvesant Avenue. The existing site is occupied by a vacant bank, previously a Chase Bank branch. The existing building on-site will be demolished. The proposed development will consist of a new 863 SF Drive-Thru Only Starbucks, with appurtenant features including site lighting, landscaping, stormwater management facilities, and service utilities. Existing site access is provided via one full-movement driveway along Park Ave and two driveways along Stuyvesant Avenue, one egress-only and one full-movement. All existing driveways will be demolished and replaced with one right ingress-only / right egress-only driveway along Park Avenue, and one right egress-only driveway along Stuyvesant Avenue.

Since the project is not proposed to disturb more than one acre of land and impervious cover is reduced by approximately 4,197 SF, the project is not defined as a Major Development per the New Jersey Department of Environmental Protection (NJDEP). Therefore, the proposed project is not subject to quantity requirements, groundwater recharge requirements or water quality requirements per the NJDEP. The stormwater management design intent for the project is to ensure that the post-construction drainage patterns match those of the existing site while reducing the overall impact to the system.

EXISTING DRAINAGE CONDITIONS

Under existing conditions, the site is comprised of one drainage area that drains via sheet flow to the northerly frontage of the site where it is discharged directly into the right of way via one of the driveways, and ultimately conveyed to the inlet just west of the site along Park Avenue (*point of analysis*). The following table summarizes the existing site drainage areas utilized in the stormwater analysis:

TABLE 1: EXISTING DRAINAGE AREAS

Drainage Area	*Description*	*Area Extents*	*Impervious Area*	*Weighted CN*	*Time of Concentration*
E-1	Bergen County Drainage System	22,468 SF	20,552 SF	93	10 Minutes*

** The minimum time of concentration was utilized.*

PROPOSED DRAINAGE CONDITIONS

Under proposed conditions, the site retains the existing drainage pattern and discharge point while adding on-site collection points. The parking area drains via sheet flow to the northerly portion of the parking lot and ultimately conveys to the existing inlet west of the site along Park Avenue *(point of analysis)*. The roof is proposed to be collected via roof leaders. Rainfall within the parking area and drive-thru is collected in two (2) stormwater inlets. All on-site collection points are connected to the existing inlet in the corner of Park Avenue and Stuyvesant Avenue. The following table summarizes the proposed site drainage areas utilized in the stormwater analysis:

TABLE 2: PROPOSED DRAINAGE AREAS

Drainage Area	*Description*	*Area Extents*	*Impervious Area*	*Weighted CN*	*Time of Concentration*
P-1	Bergen County Drainage System	22,468 SF	16,355 SF	82	10 Minutes*

** The minimum time of concentration was utilized.*

STORMWATER MANAGEMENT ANALYSIS

An analysis was performed to compare the pre-construction and post-construction runoff conditions on-site. As indicated by the NRCS Soil Survey in the Appendix of this Statement, the underlying soils on site are classified as Urban Land and Dunellen-Urban Land Complex, therefore hydraulic soil group (HSG) A was utilized in the analysis. It should be noted that a minimum concentration of 10-minutes was utilized for all drainage areas. The following table outlines the stormwater runoff peak discharge rates and runoff volumes for the proposed development:

TABLE 3: STORMWATER PEAK DISCHARGE ANALYSIS TO THE COUNTY DRAINAGE SYSTEM SUMMARY (POI-1)

Storm Event	*Pre-Development Peak Discharge*	*Pre-Development Peak Runoff Volume*	*Post-Development Peak Discharge*	*Post-Development Peak Runoff Volume*
2-Year	1.27 CFS	4,750 CF	0.85 CFS	3,034 CF
10-Year	2.03 CFS	7,865 CF	1.60 CFS	5,786 CF
25-Year	2.55 CFS	10,014 CF	2.13 CFS	7,773 CF
100-Year	3.49 CFS	13,970 CF	3.10 CFS	11,528 CF

As shown in the tables above, the post-development condition is projected to reduce peak discharge rates and peak runoff volumes when compared to pre-development conditions. Further details regarding the hydrologic analysis can be found in the appendix of this Statement.

CONCLUSION

The proposed site has been designed to maintain or decrease the peak discharge and volume runoff for the project area. Additionally, a stormwater conveyance system is proposed to collect stormwater on-site. No adverse impacts to the Bergen County drainage system or adjacent properties are anticipated as a result of the project.

Prepared by:

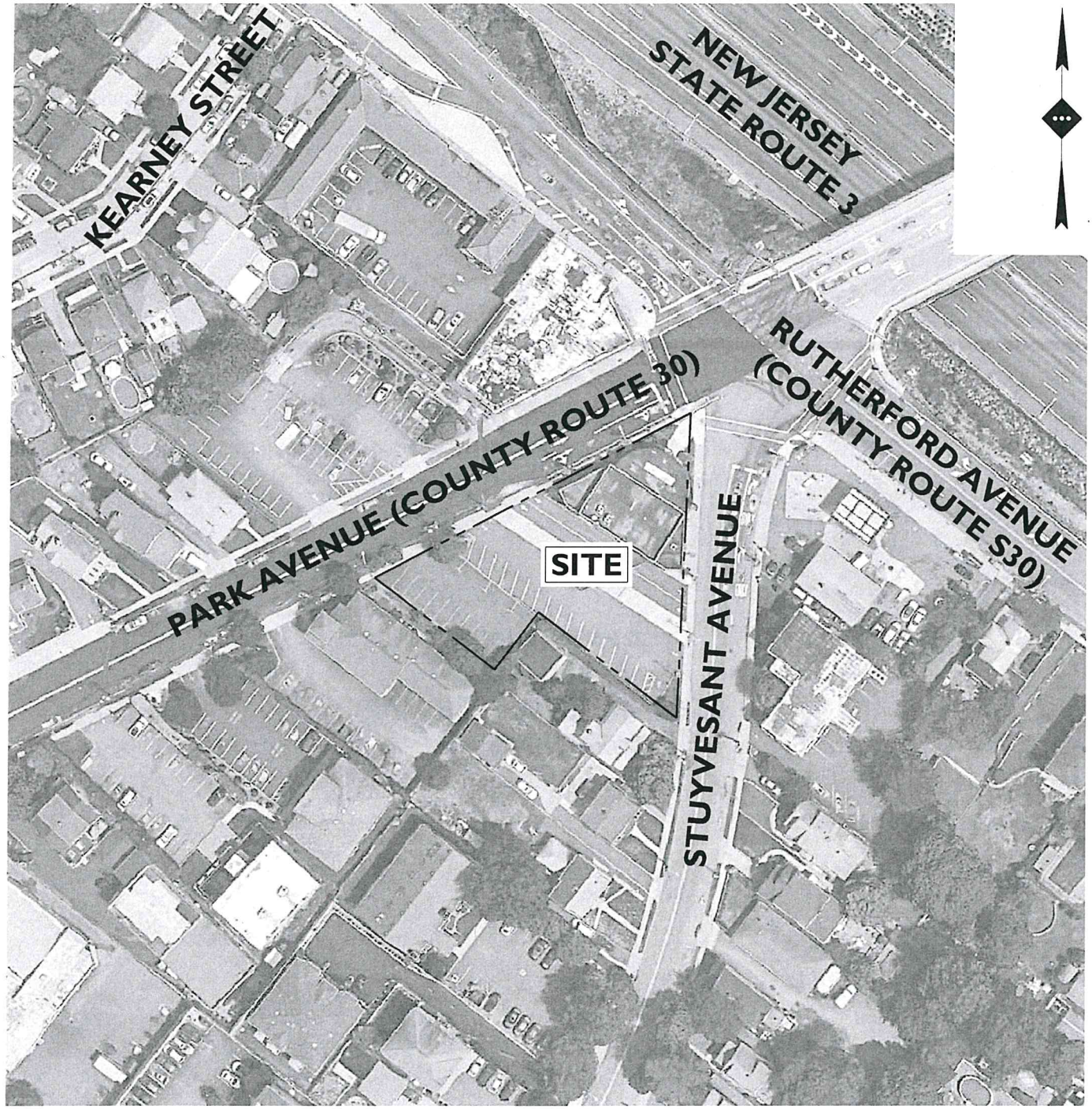
Zachary E. Chaplin, PE
Stonefield Engineering and Design, LLC

APPENDIX A

AERIAL MAP

USGS QUADRANGLE MAP

TAX/ZONING MAP



AERIAL MAP

100' 0' 100' 200'

GRAPHIC SCALE IN FEET
1" = 100'

SOURCE: GOOGLE EARTH PRO, 2018.

MANZO DOREN PARK AVE, LLC

PROPOSED STARBUCKS DRIVE-THRU ONLY FACILITY

BLOCK 6 / LOTS 1 AND 38
1 STUYVESANT AVENUE
TOWNSHIP OF LYNDHURST, BERGEN COUNTY, NEW JERSEY

DRAWN BY:	AM
CHECKED BY:	ZC
DATE:	02/25/2021
SCALE:	1" = 100'
PROJECT ID:	RUT-200355

STONEFIELD engineering & design

Rutherford, NJ · New York, NY
Princeton, NJ · Tampa, FL · Detroit, MI
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584 Broadway, Suite 310, New York, NY 10012
Phone 718.606.8305

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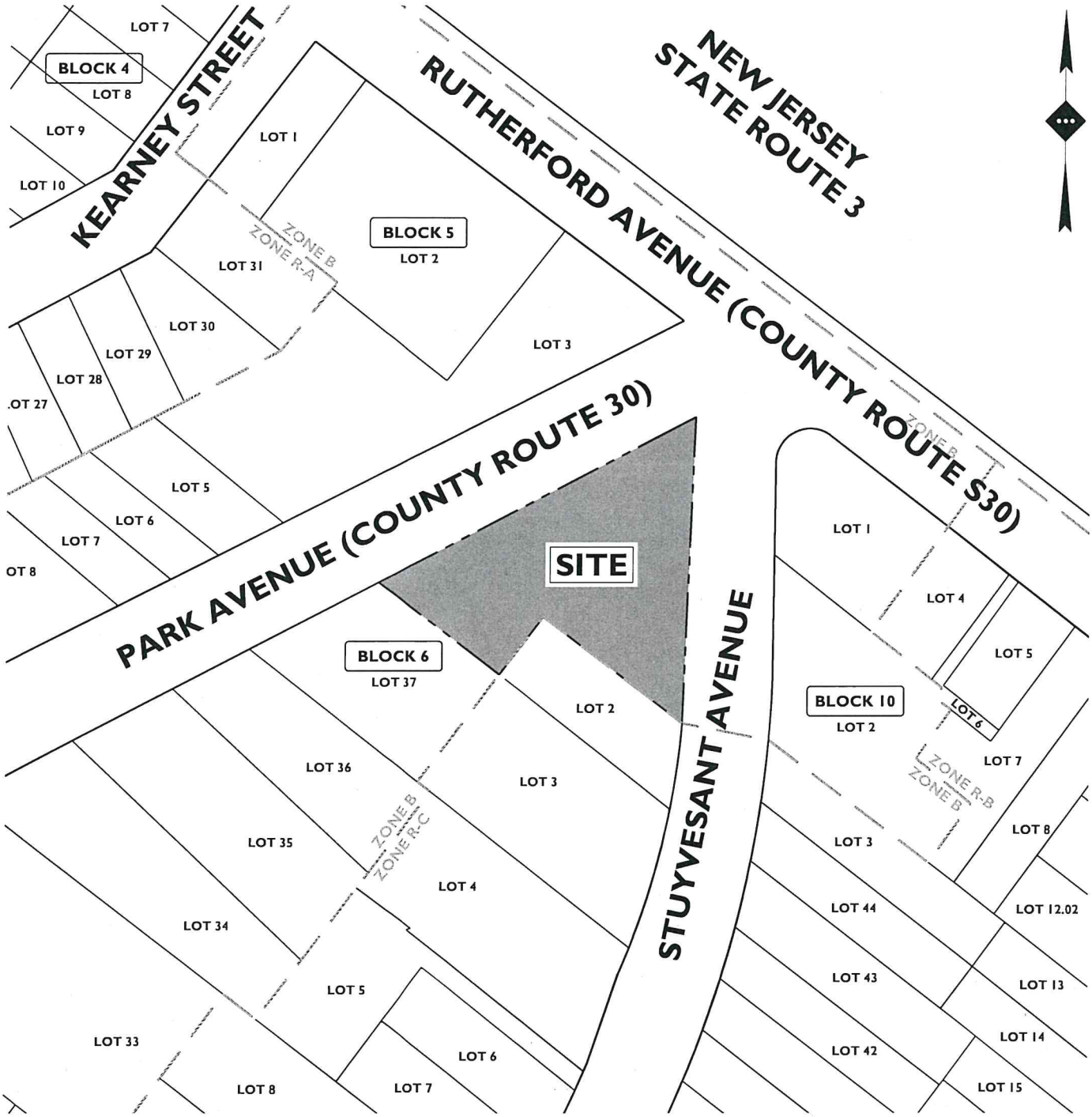

TAX AND ZONING MAP

100' 0' 100' 200'

GRAPHIC SCALE IN FEET

1" = 100'

SOURCE: TOWNSHIP OF LYNDHURST TAX MAP, REVISED 10/01/2002 AND TOWNSHIP OF LYNDHURST ZONING MAP, DATED APRIL 2012.

MANZO DOREN PARK AVE, LLC

PROPOSED STARBUCKS DRIVE-THRU ONLY FACILITY

BLOCK 6 / LOTS 1 AND 38
1 STUYVESANT AVENUE
TOWNSHIP OF LYNDHURST, BERGEN COUNTY, NEW JERSEY

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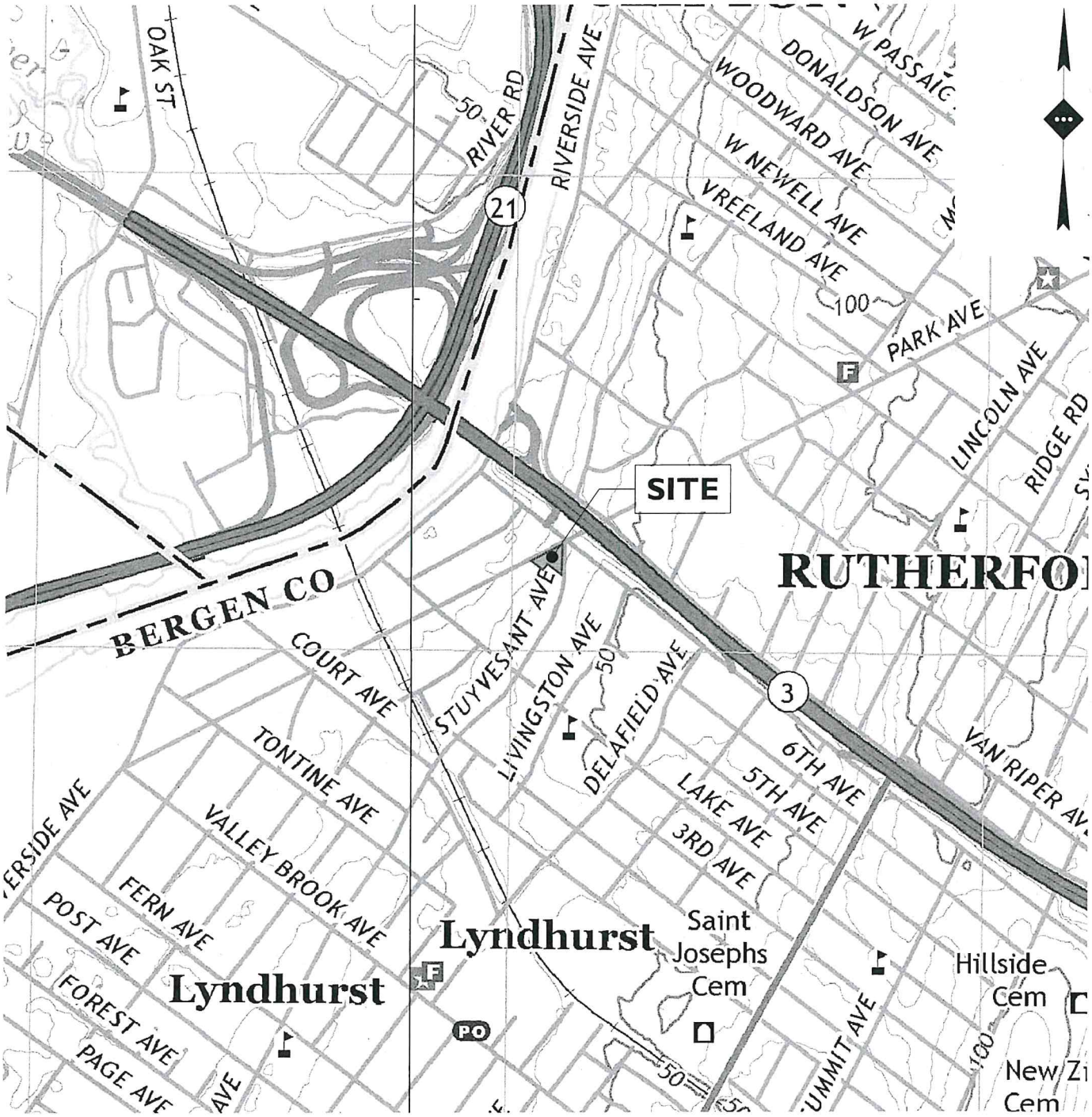

USGS QUADRANGLE MAP

1,000' 0' 1,000' 2,000'

GRAPHIC SCALE IN FEET

1"= 1,000'

SOURCE: USGS 7.5 MINUTE SERIES, WEEHAWKEN, NJ-NY, 2016.

MANZO DOREN PARK AVE, LLC

PROPOSED STARBUCKS DRIVE-THRU ONLY FACILITY

BLOCK 6 / LOTS 1 AND 38
1 STUYVESANT AVENUE
TOWNSHIP OF LYNDHURST, BERGEN COUNTY, NEW JERSEY

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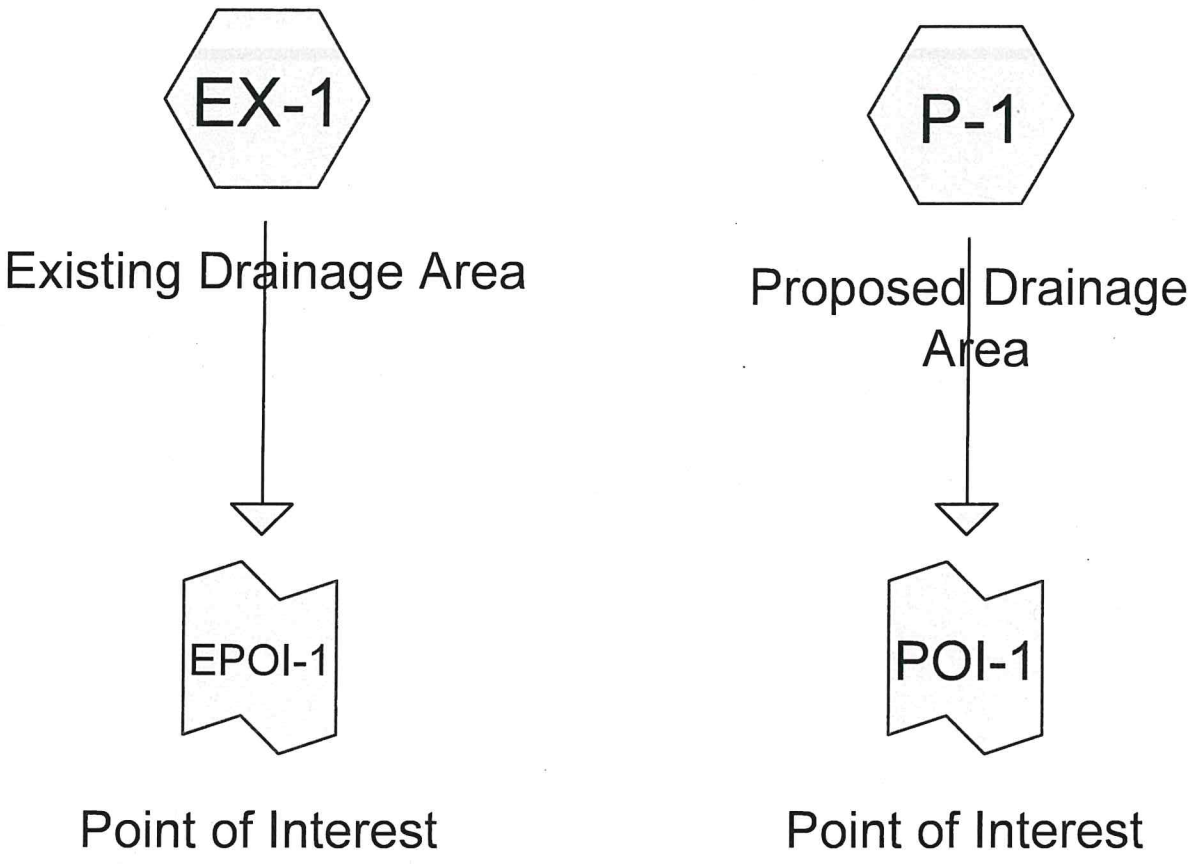
APPENDIX B
HYDROCAD DATA & ANALYSIS RESULTS



Subcat Reach Pond Link

Routing Diagram for 2021-02-24_Stormwater
Prepared by {enter your company name here}, Printed 2/25/2021
HydroCAD® 10.00-22 s/n 10626 © 2018 HydroCAD Software Solutions LLC

Summary for Subcatchment EX-1: Existing Drainage Area

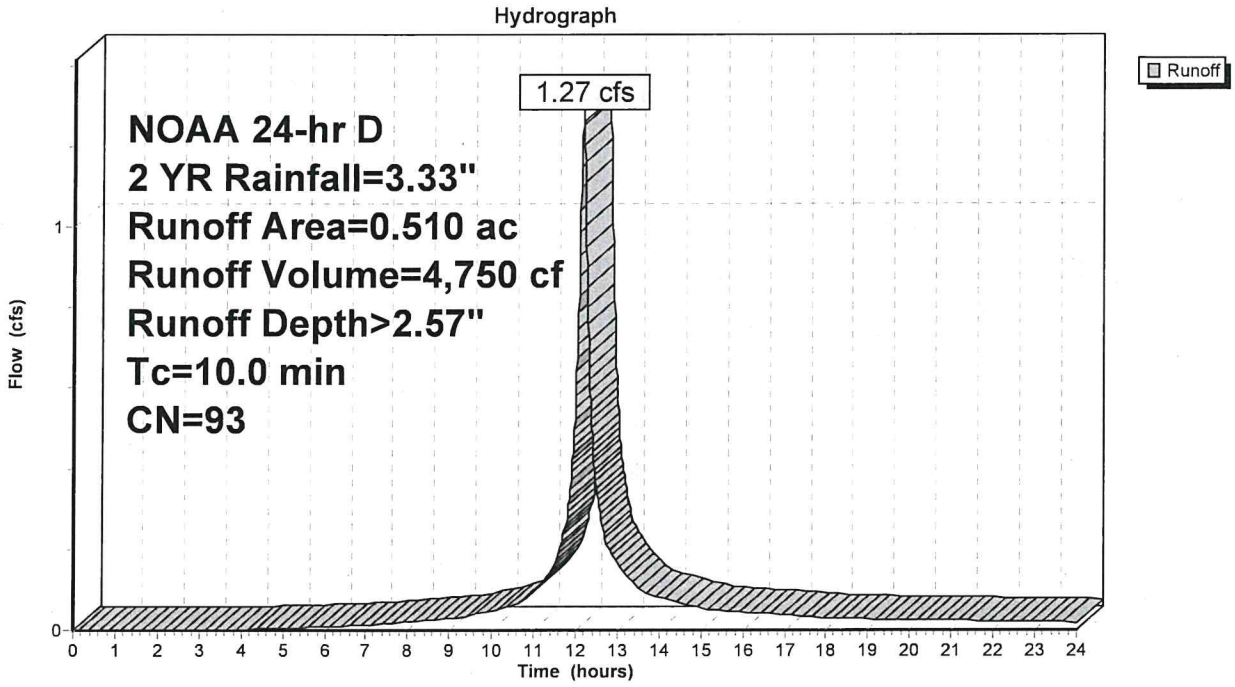
Runoff = 1.27 cfs @ 12.17 hrs, Volume= 4,750 cf, Depth> 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.33"

Area (ac)	CN	Description
0.470	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
0.510	93	Weighted Average
0.040		7.84% Pervious Area
0.470		92.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment EX-1: Existing Drainage Area



Summary for Subcatchment P-1: Proposed Drainage Area

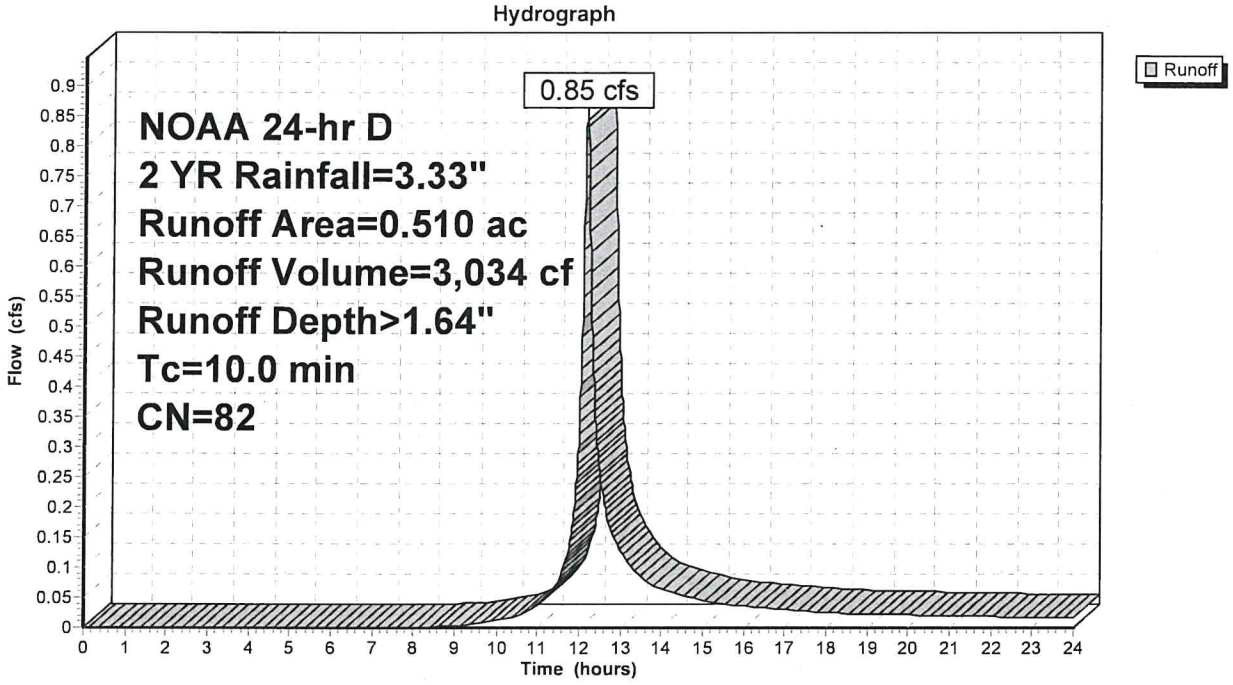
Runoff = 0.85 cfs @ 12.18 hrs, Volume= 3,034 cf, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.33"

Area (ac)	CN	Description
0.370	98	Paved parking, HSG A
0.140	39	>75% Grass cover, Good, HSG A
0.510	82	Weighted Average
0.140		27.45% Pervious Area
0.370		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment P-1: Proposed Drainage Area

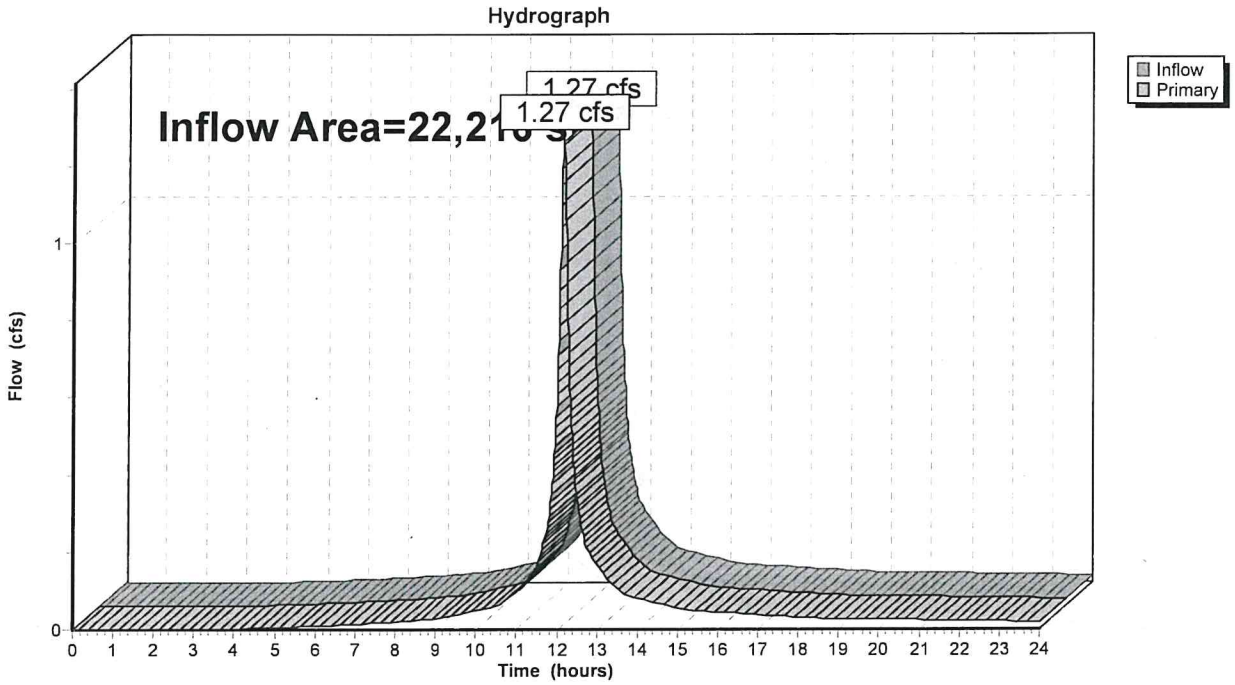


Summary for Link EPOI-1: Point of Interest

Inflow Area = 22,216 sf, 92.16% Impervious, Inflow Depth > 2.57" for 2 YR event
Inflow = 1.27 cfs @ 12.17 hrs, Volume= 4,750 cf
Primary = 1.27 cfs @ 12.17 hrs, Volume= 4,750 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EPOI-1: Point of Interest

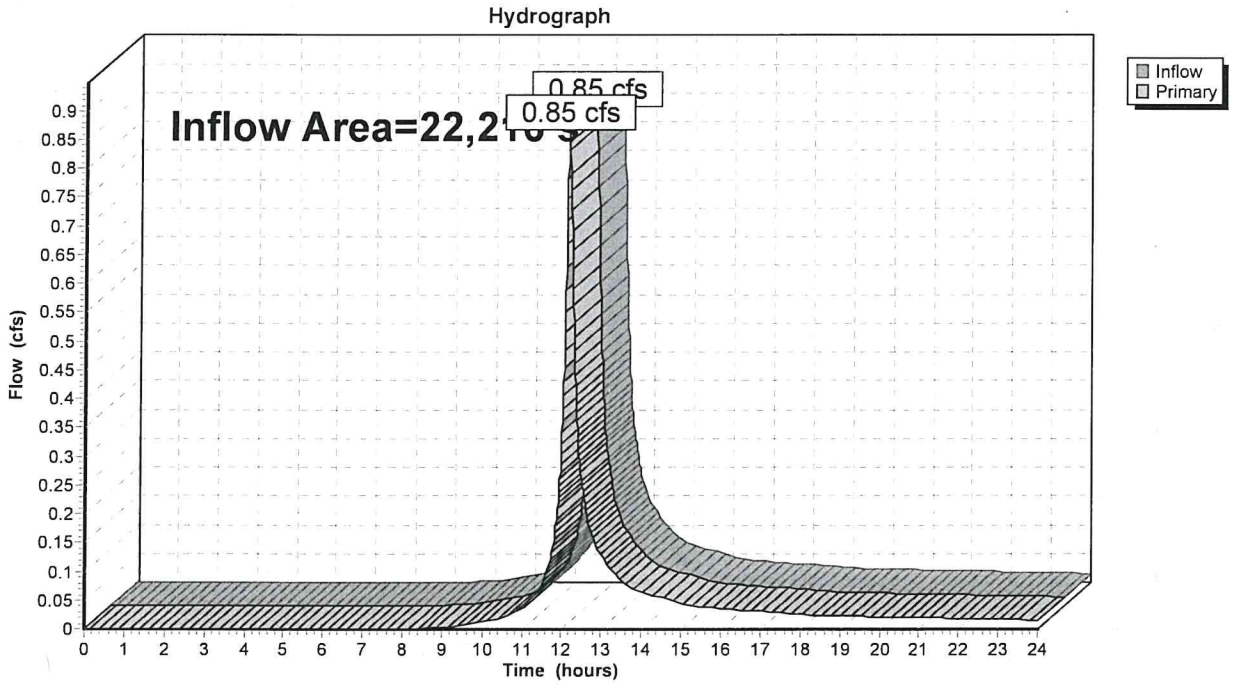


Summary for Link POI-1: Point of Interest

Inflow Area = 22,216 sf, 72.55% Impervious, Inflow Depth > 1.64" for 2 YR event
Inflow = 0.85 cfs @ 12.18 hrs, Volume= 3,034 cf
Primary = 0.85 cfs @ 12.18 hrs, Volume= 3,034 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link POI-1: Point of Interest



Summary for Subcatchment EX-1: Existing Drainage Area

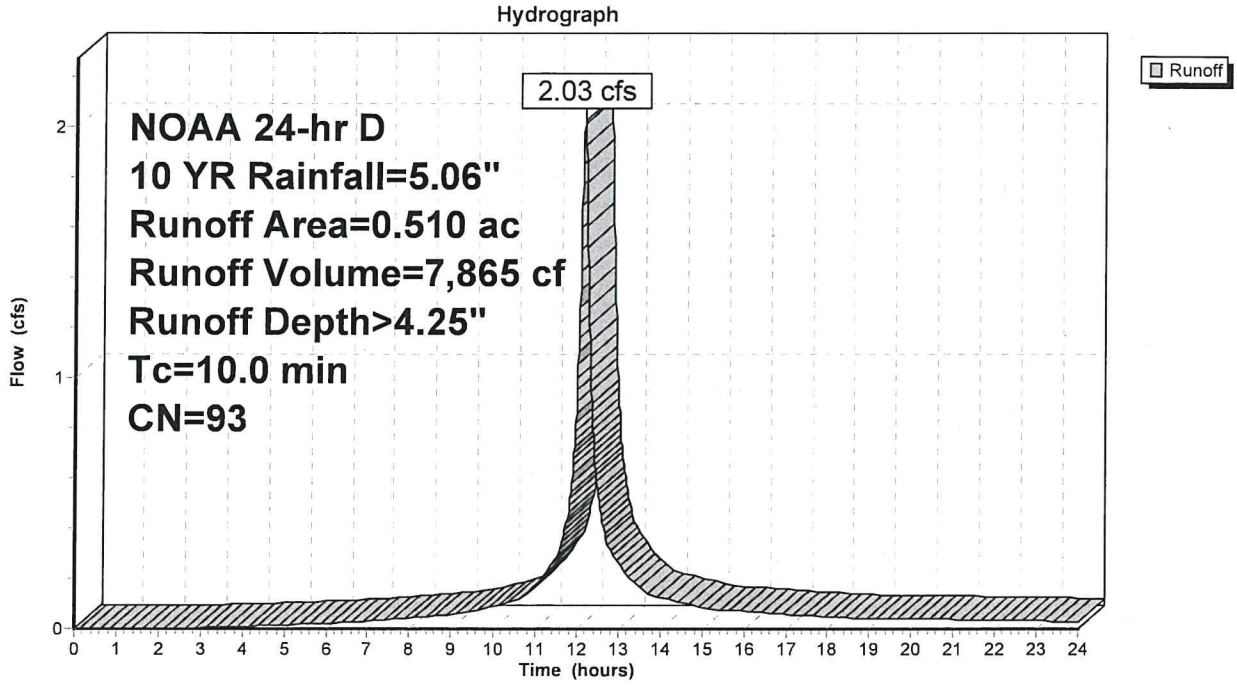
Runoff = 2.03 cfs @ 12.17 hrs, Volume= 7,865 cf, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.06"

Area (ac)	CN	Description
0.470	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
0.510	93	Weighted Average
0.040		7.84% Pervious Area
0.470		92.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment EX-1: Existing Drainage Area



Summary for Subcatchment P-1: Proposed Drainage Area

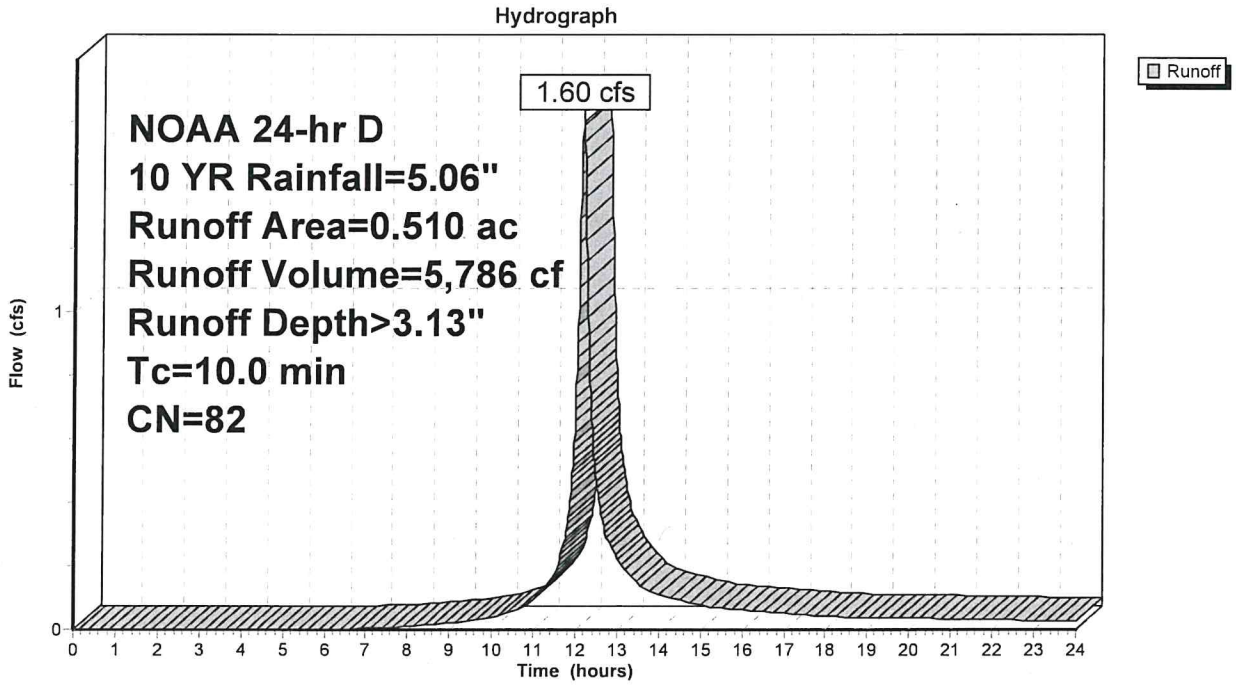
Runoff = 1.60 cfs @ 12.17 hrs, Volume= 5,786 cf, Depth> 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.06"

Area (ac)	CN	Description
0.370	98	Paved parking, HSG A
0.140	39	>75% Grass cover, Good, HSG A
0.510	82	Weighted Average
0.140		27.45% Pervious Area
0.370		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment P-1: Proposed Drainage Area

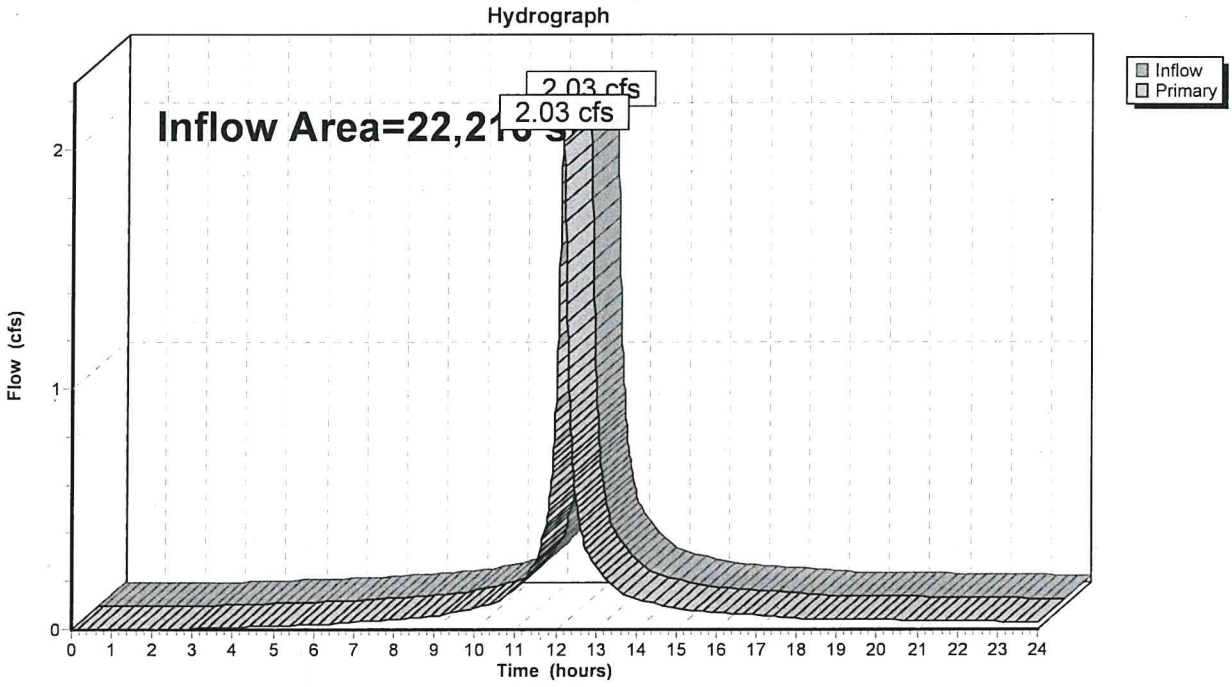


Summary for Link EPOI-1: Point of Interest

Inflow Area = 22,216 sf, 92.16% Impervious, Inflow Depth > 4.25" for 10 YR event
Inflow = 2.03 cfs @ 12.17 hrs, Volume= 7,865 cf
Primary = 2.03 cfs @ 12.17 hrs, Volume= 7,865 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EPOI-1: Point of Interest

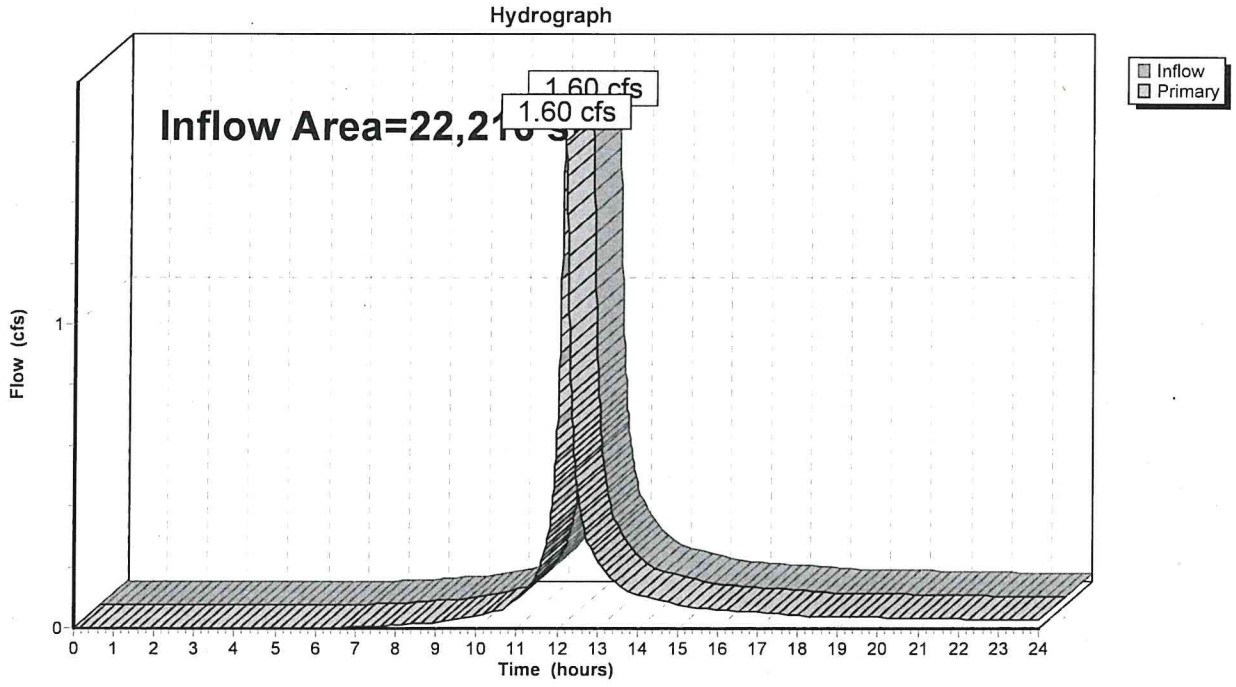


Summary for Link POI-1: Point of Interest

Inflow Area = 22,216 sf, 72.55% Impervious, Inflow Depth > 3.13" for 10 YR event
Inflow = 1.60 cfs @ 12.17 hrs, Volume= 5,786 cf
Primary = 1.60 cfs @ 12.17 hrs, Volume= 5,786 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link POI-1: Point of Interest



Summary for Subcatchment EX-1: Existing Drainage Area

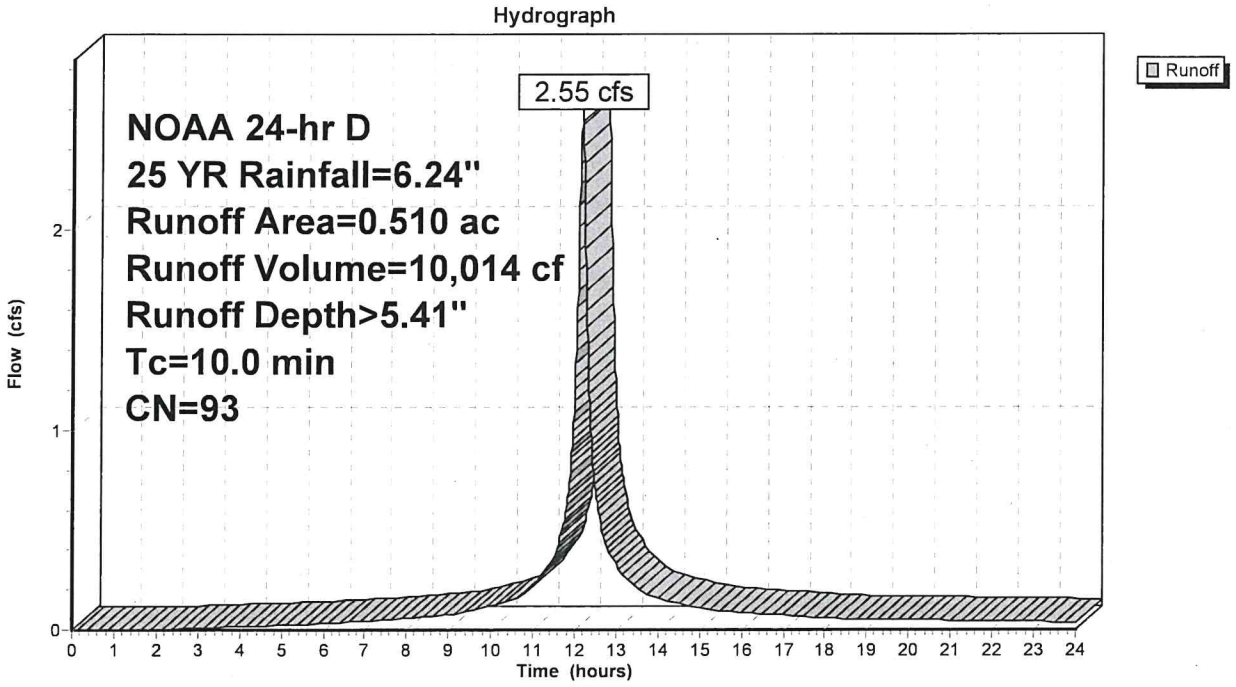
Runoff = 2.55 cfs @ 12.17 hrs, Volume= 10,014 cf, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25 YR Rainfall=6.24"

Area (ac)	CN	Description
0.470	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
0.510	93	Weighted Average
0.040		7.84% Pervious Area
0.470		92.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment EX-1: Existing Drainage Area



Summary for Subcatchment P-1: Proposed Drainage Area

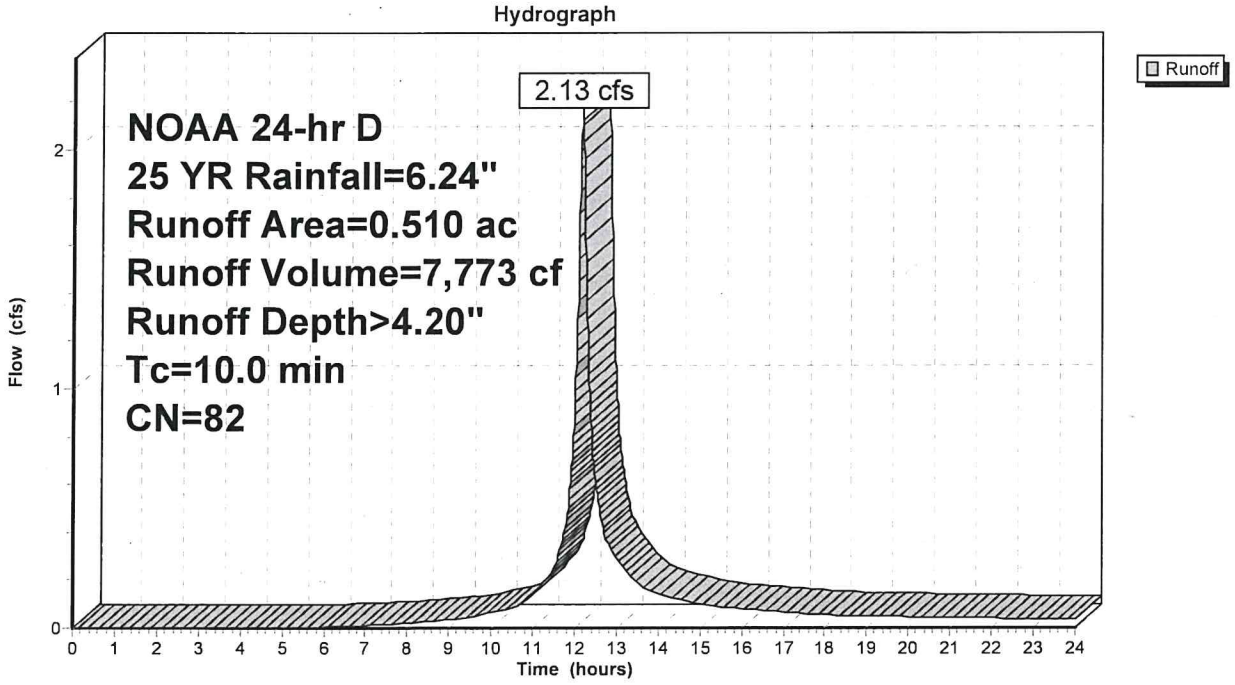
Runoff = 2.13 cfs @ 12.17 hrs, Volume= 7,773 cf, Depth> 4.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25 YR Rainfall=6.24"

Area (ac)	CN	Description
0.370	98	Paved parking, HSG A
0.140	39	>75% Grass cover, Good, HSG A
0.510	82	Weighted Average
0.140		27.45% Pervious Area
0.370		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment P-1: Proposed Drainage Area

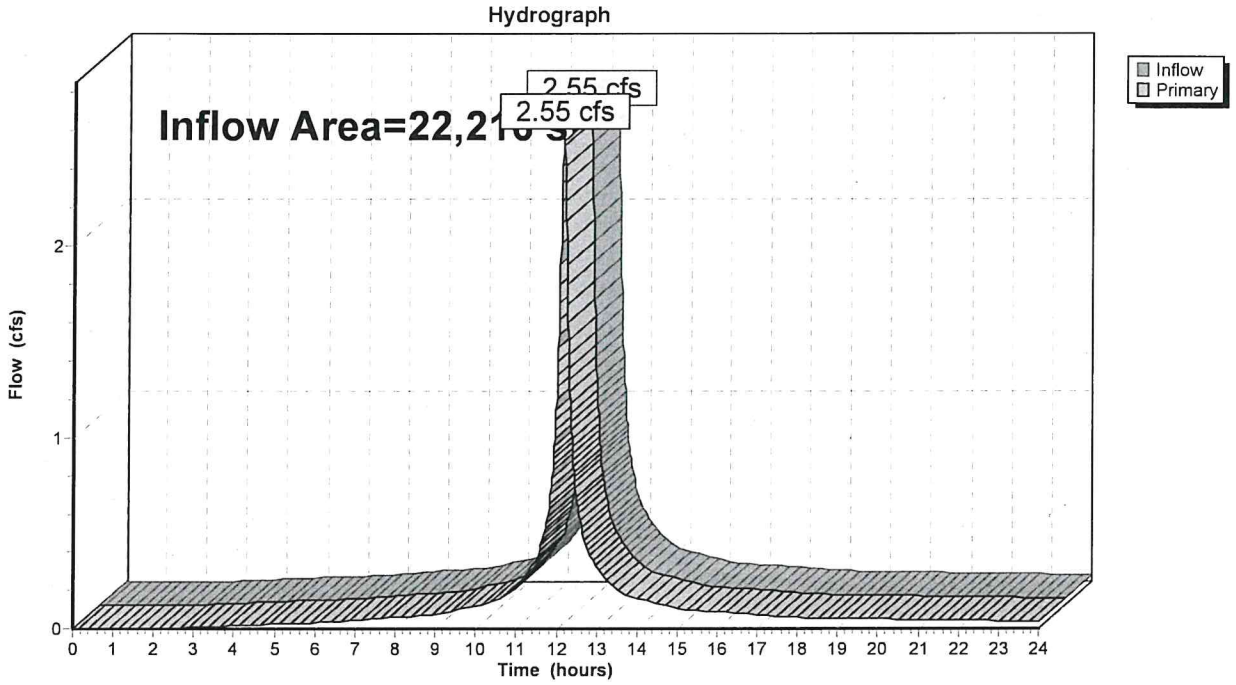


Summary for Link EPOI-1: Point of Interest

Inflow Area = 22,216 sf, 92.16% Impervious, Inflow Depth > 5.41" for 25 YR event
Inflow = 2.55 cfs @ 12.17 hrs, Volume= 10,014 cf
Primary = 2.55 cfs @ 12.17 hrs, Volume= 10,014 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EPOI-1: Point of Interest

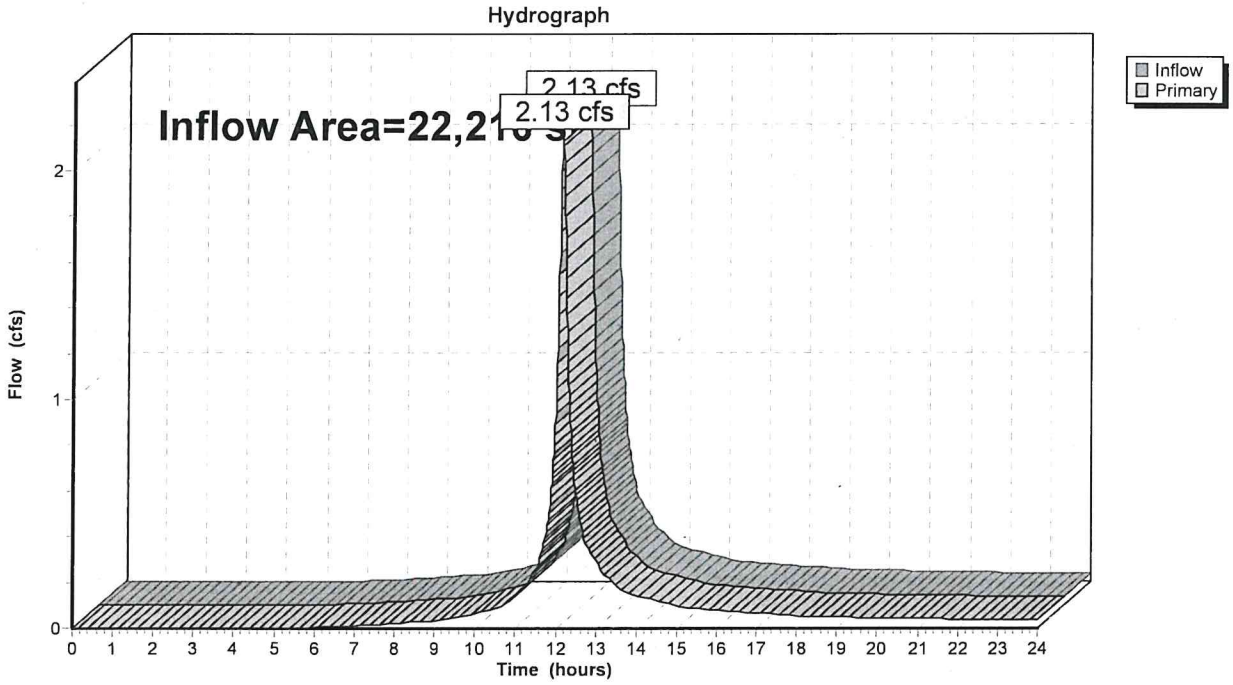


Summary for Link POI-1: Point of Interest

Inflow Area = 22,216 sf, 72.55% Impervious, Inflow Depth > 4.20" for 25 YR event
Inflow = 2.13 cfs @ 12.17 hrs, Volume= 7,773 cf
Primary = 2.13 cfs @ 12.17 hrs, Volume= 7,773 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link POI-1: Point of Interest



Summary for Subcatchment EX-1: Existing Drainage Area

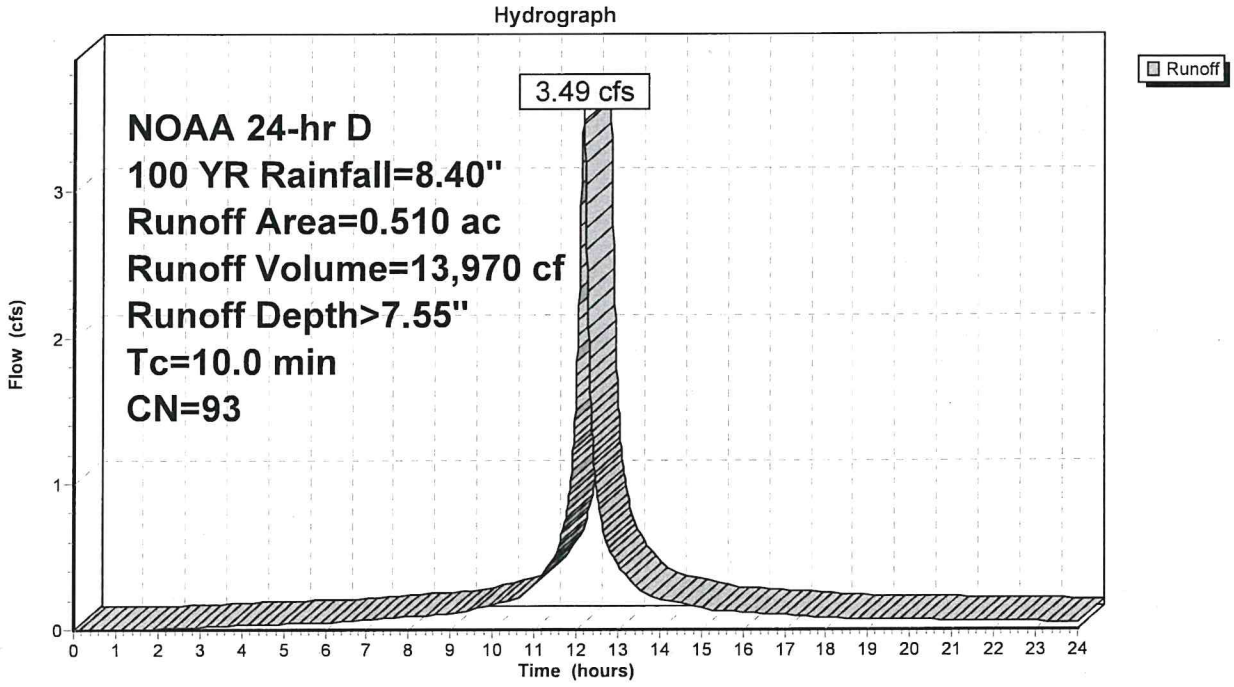
Runoff = 3.49 cfs @ 12.17 hrs, Volume= 13,970 cf, Depth> 7.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100 YR Rainfall=8.40"

Area (ac)	CN	Description
0.470	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
0.510	93	Weighted Average
0.040		7.84% Pervious Area
0.470		92.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment EX-1: Existing Drainage Area



Summary for Subcatchment P-1: Proposed Drainage Area

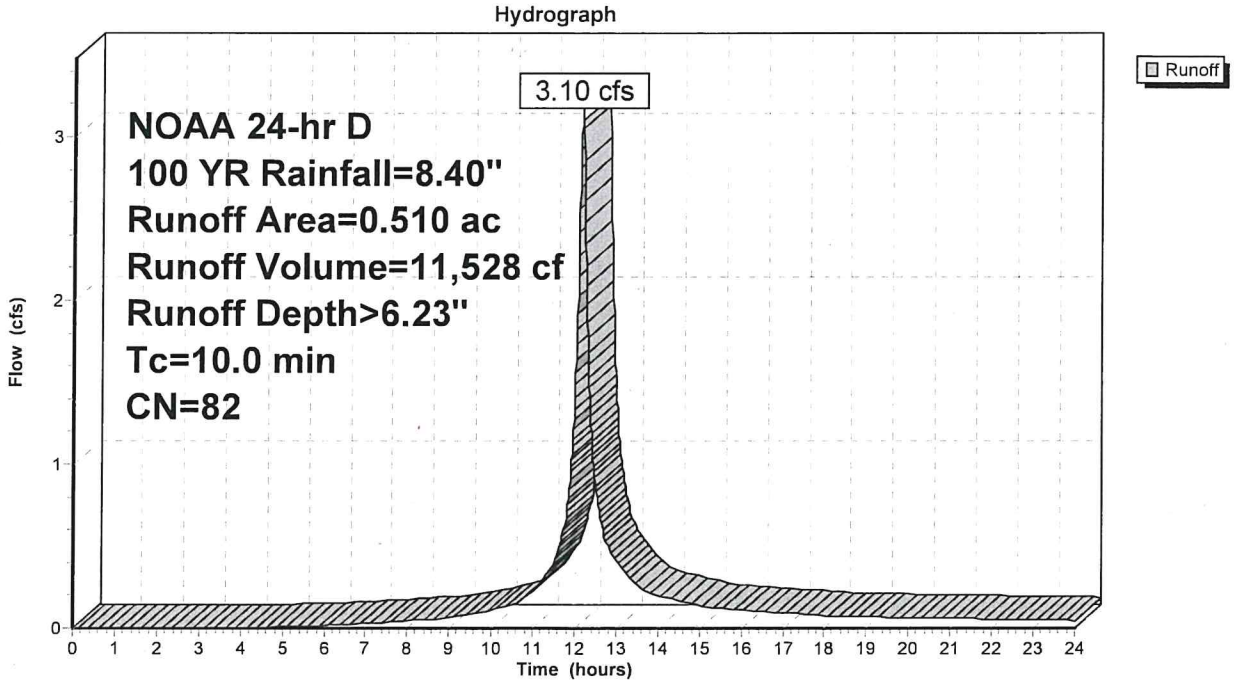
Runoff = 3.10 cfs @ 12.17 hrs, Volume= 11,528 cf, Depth> 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100 YR Rainfall=8.40"

Area (ac)	CN	Description
0.370	98	Paved parking, HSG A
0.140	39	>75% Grass cover, Good, HSG A
0.510	82	Weighted Average
0.140		27.45% Pervious Area
0.370		72.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Direct Entry**

Subcatchment P-1: Proposed Drainage Area

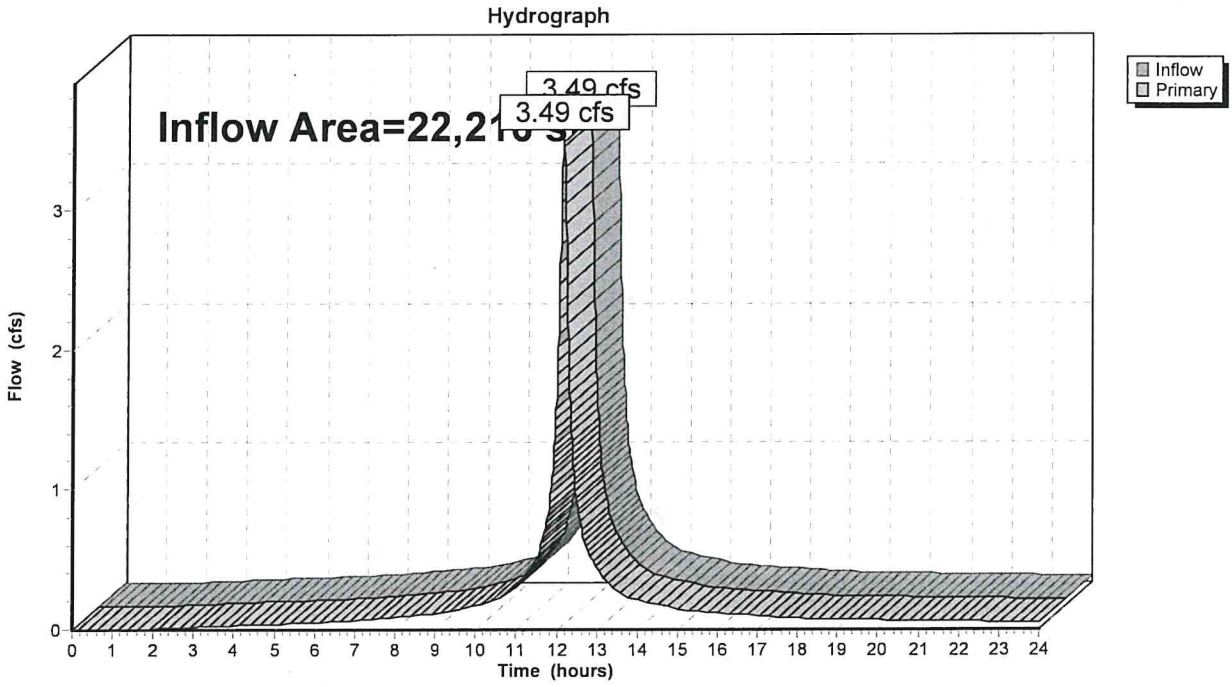


Summary for Link EPOI-1: Point of Interest

Inflow Area = 22,216 sf, 92.16% Impervious, Inflow Depth > 7.55" for 100 YR event
Inflow = 3.49 cfs @ 12.17 hrs, Volume= 13,970 cf
Primary = 3.49 cfs @ 12.17 hrs, Volume= 13,970 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link EPOI-1: Point of Interest

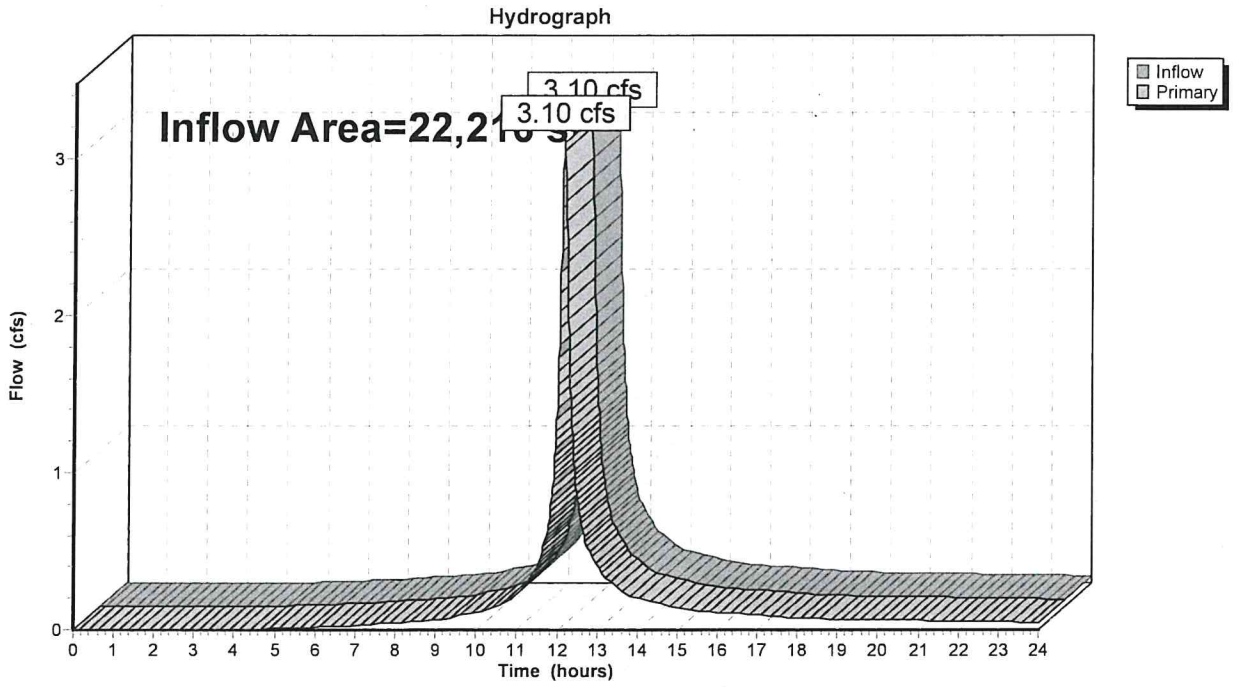


Summary for Link POI-1: Point of Interest

Inflow Area = 22,216 sf, 72.55% Impervious, Inflow Depth > 6.23" for 100 YR event
Inflow = 3.10 cfs @ 12.17 hrs, Volume= 11,528 cf
Primary = 3.10 cfs @ 12.17 hrs, Volume= 11,528 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link POI-1: Point of Interest



APPENDIX C
NRCS SOILS SURVEY

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bergen County, New Jersey

July 23, 2019

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bergen County, New Jersey
Survey Area Data: Version 15, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 25, 2014—Sep 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DuuB	Dunellen-Urban land complex, 3 to 8 percent slopes	0.2	26.3%
DuuD	Dunellen-Urban land complex, 15 to 25 percent slopes	0.2	38.6%
UR	Urban land	0.2	35.1%
Totals for Area of Interest		**0.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bergen County, New Jersey

DuuB—Dunellen-Urban land complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b0rt
Elevation: 50 to 150 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunellen and similar soils: 60 percent
Urban land, dunellen substratum: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunellen

Setting

Landform: Outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy outwash derived from sandstone

Typical profile

A1 - 0 to 8 inches: sandy loam
A2 - 8 to 14 inches: sandy loam
BA - 14 to 20 inches: sandy loam
Bt - 20 to 31 inches: sandy loam
C - 31 to 42 inches: sandy loam
2C - 42 to 70 inches: stratified gravelly sand to sand to loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Urban Land, Dunellen Substratum

Setting

Landform: Outwash plains

Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

H1 - 0 to 12 inches: material
H2 - 12 to 31 inches: sandy loam
2C - 31 to 42 inches: sandy loam
3C - 42 to 70 inches: loamy sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents, dunellen substratum

Percent of map unit: 10 percent
Landform: Outwash plains
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

DuuD—Dunellen-Urban land complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: b0rw
Elevation: 50 to 1,200 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Dunellen and similar soils: 55 percent
Urban land: 25 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dunellen

Setting

Landform: Outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy outwash derived from sandstone

Typical profile

A - 0 to 2 inches: loam
Bt1 - 2 to 15 inches: loam
Bt2 - 15 to 33 inches: loam
2C - 33 to 66 inches: stratified gravelly sand to sand to loamy sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Riverhead

Percent of map unit: 5 percent
Landform: Outwash fans
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Udorthents, dunellen substratum

Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: No

Birdsboro

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Boonton, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (three-dimensional): Upper third of mountainflank, center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

UR—Urban land

Map Unit Setting

National map unit symbol: b0ss
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

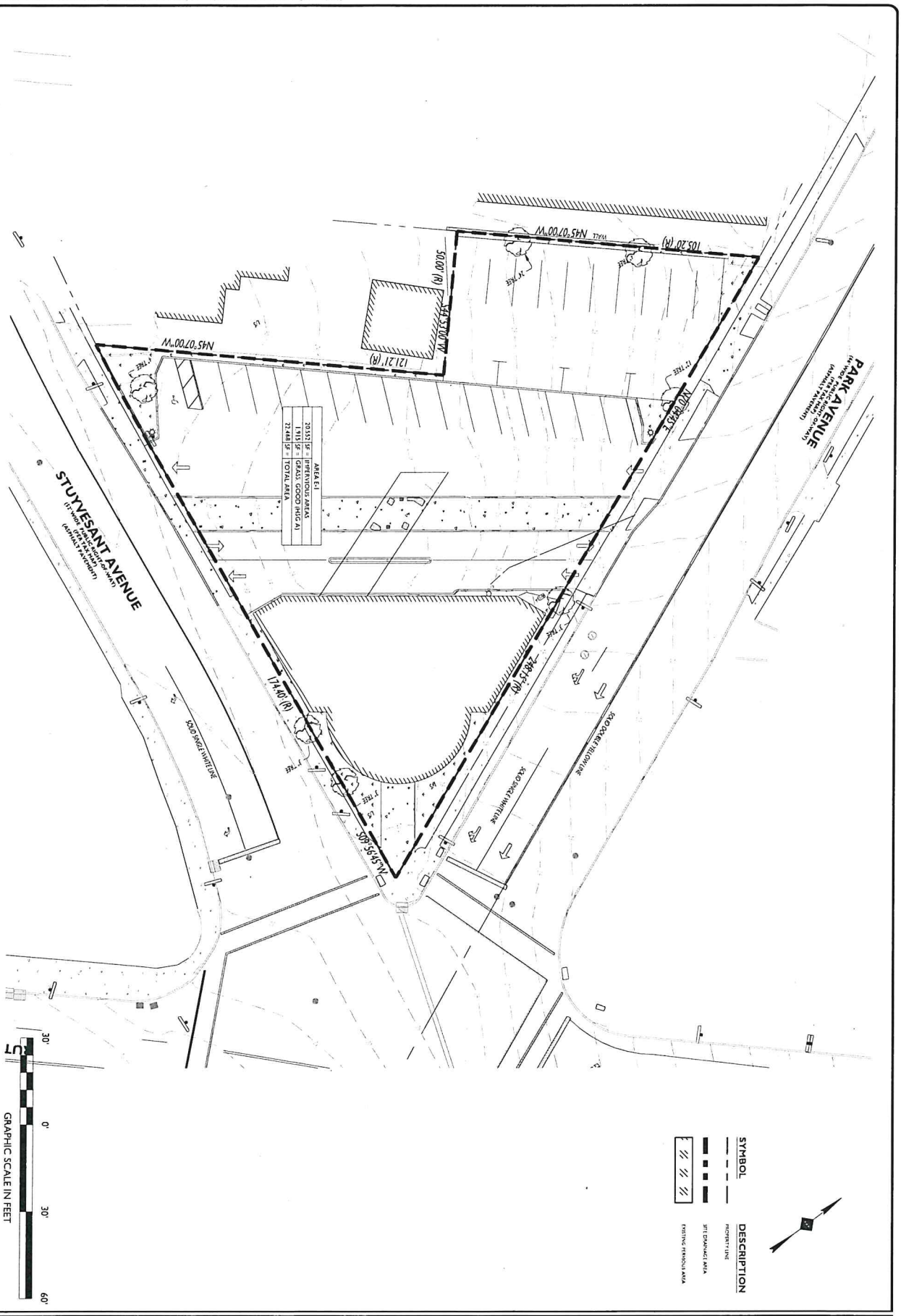
Minor Components

Udorthents

Percent of map unit: 5 percent

Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

APPENDIX D
DRAINAGE AREA MAPS



DRAINAGE AREA MAPS

MANZO DOREN PARK AVE, LLC

PROPOSED STARBUCKS DRIVE-THRU ONLY FACILITY

BLOCK 6, LOTS 1 AND 28
TOWNSHIP OF LYNDHURST TAX MAP SHEET #1
1 STUYVESANT AVENUE
TOWNSHIP OF LYNDHURST
BERGEN COUNTY, NEW JERSEY

STONEFIELD engineering & design
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ISSUE	DATE	BY	DESCRIPTION
01	03/11/2021	AM	ISSUED FOR REVIEW

NOT APPROVED FOR CONSTRUCTION

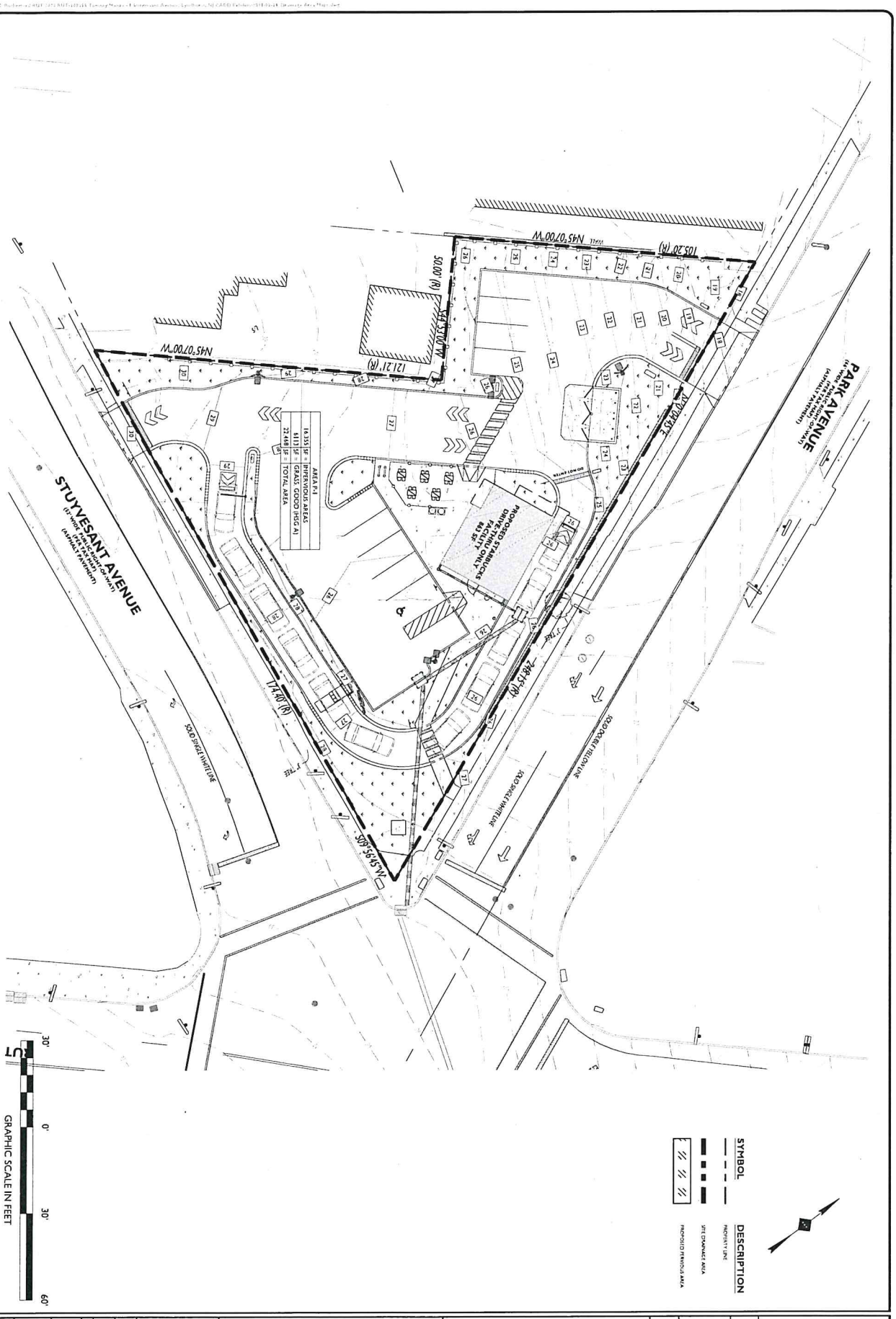
SCALE: (H) 1" = 30'

PROJECT ID: RUT-220351

STONEFIELD engineering & design

TITLE: EXISTING DRAINAGE AREA MAP

SHEET: 1 OF 2



DRAINAGE AREA MAPS

MANZO DOREN PARK AVE, LLC

PROPOSED STARBUCKS DRIVE-THRU ONLY FACILITY

BLOCK 4, LOTS 1 AND 38
TOWNSHIP OF LYNDHURST TAX MAP SHEET #1
1 STUYVESANT AVENUE
TOWNSHIP OF LYNDHURST
BERGEN COUNTY, NEW JERSEY

STONEFIELD engineering & design
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ISSUE	DATE	BY	DESCRIPTION
01	03/11/2021	AM	ISSUED FOR REVIEW

NOT APPROVED FOR CONSTRUCTION

SCALE: (H) 1" = 30'

PROJECT ID: RUT-220335

STONEFIELD engineering & design

TITLE: PROPOSED DRAINAGE AREA MAP

SHEET: 2 OF 2